

Adapting an Entrepreneurial Ecosystem approach for Climate-Smart Small Ruminant Production in Pastoral Communities



*Better lives and a better planet
through livestock*

Edwin Oyieng, Winfred Sila and Julie Ojango

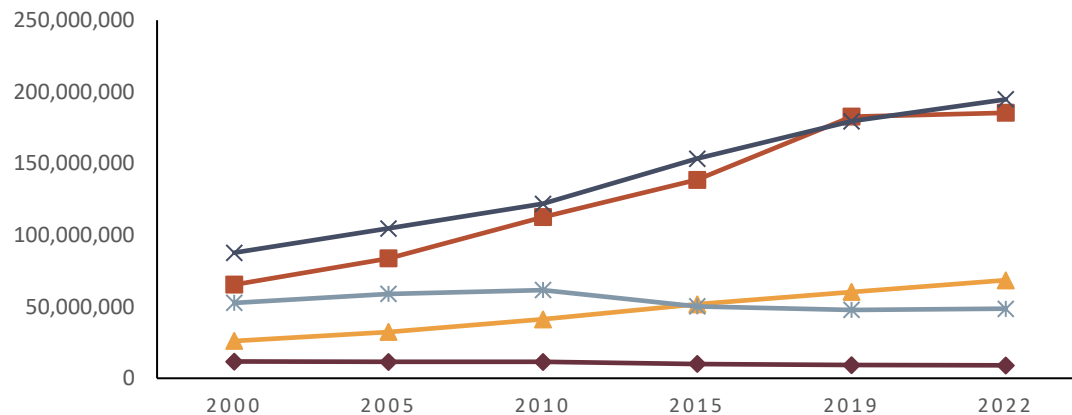
*Livestock Genetics Nutrition and Feed Resources Program
International Livestock Research Institute
Nairobi, Kenya*

ILRI-CIMMYT meeting
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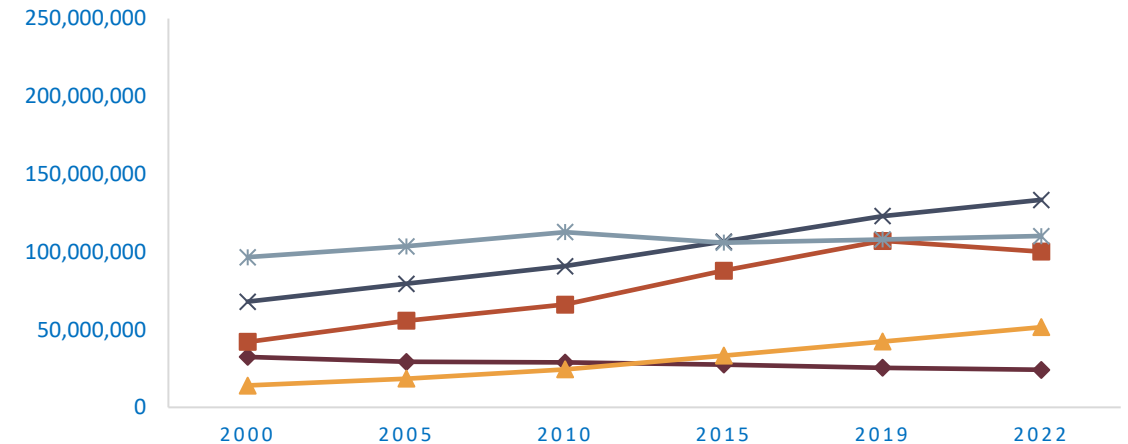
Sheep and Goats in Africa

- Africa hosts 33% of the world's sheep, 42% of the world's goats (FAOSTAT 2024)
- Indigenous breeds constitute approximately 60% of the population

NUMBER OF GOATS



NUMBER OF SHEEP



Southern Africa Eastern Africa Central Africa
 Western Africa Northern Africa



The challenge

- Changing **climatic conditions** have resulted in an increased frequency and severity of droughts in ASAL. e.g. 2.6 million animals died in Kenya due to drought between 2020-2023
- Pastoralist communities living in ASAL are in a constant state of "recovery from previous drought" (**structural poverty**)
- Droughts cause restricted **mobility**, **desertification**, loss of **breed diversity** and reduced resilience within species
- **Limited infrastructure** to support interventions



...The challenge

- **Populations are growing** alongside a growing market demand for products
- Sheep and goats are valued by all pastoral communities- but there are **limited technologies** that integrate productivity & resilience across populations
- **Limited alternative investments** for ASAL occupied by pastoralists

Key SDG's targeted



Improve nutrition by doubling affordable access to quality animal-source foods



Women's economic empowerment through 100% increase in control over livestock assets



Reduction in negative impact of livestock on the environment



Increase in value of livestock resources and rangelands in LMICs

Research and information gaps

- Imperfect information on existing livestock to guide strategic intervention decisions (**information asymmetry**)
- There are **gaps in the evidence-base** to support early warning & response mechanisms
- Few **options for integration** of indigenous knowledge systems, social networks, and alternative technology interventions
- Appropriate **breeding programs and strategies** to drive change in environments where external inputs are limiting
- Discovering of **existing unique genes** in populations and possible pathways for genomic selection





Question: How can genetics impact livelihoods under changing climatic conditions?

- ❖ **Understand** the characteristics of existing diversity, losses and needs related to small ruminants across communities
- ❖ **Promote behavior change** and reorient producer mindsets to **Entrepreneurship** in Small ruminant production
- ❖ Foster **Trust** and **Collaboration** across actors in different nodes of the small ruminant value chain
- ❖ Build and develop **capacity** for supportive ecosystems to create and improve **productivity** while maintaining **diversity** in Small ruminant genetic resources

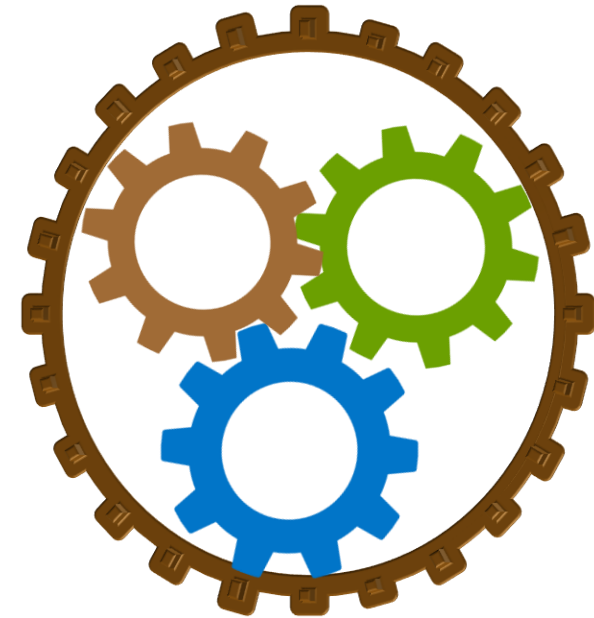
Defining an Entrepreneurial Ecosystem

Entrepreneurs: Individuals who create and run new businesses, driving innovation and economic growth

Ecosystem: a community that interacts with each other in a specific area

Entrepreneurial Ecosystem

a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship

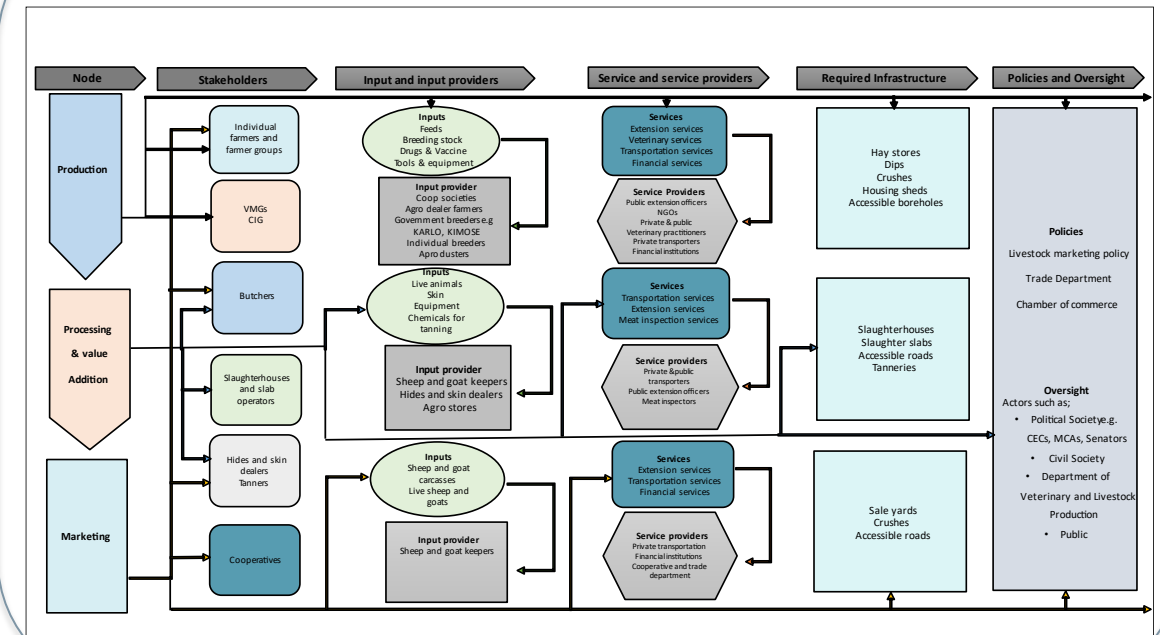


Reconnaissance and Mapping

- Review literature on target areas
- Develop profiles of target areas, environments and communities
- Secure Buy-in from area administration

Ref: Module 1: Core Innovation Groups for Livestock Improvement -Digital module

<https://hdl.handle.net/10568/108904> , <https://srm.ilri.org>



Core Innovation Groups
for Livestock Improvement

START COURSE

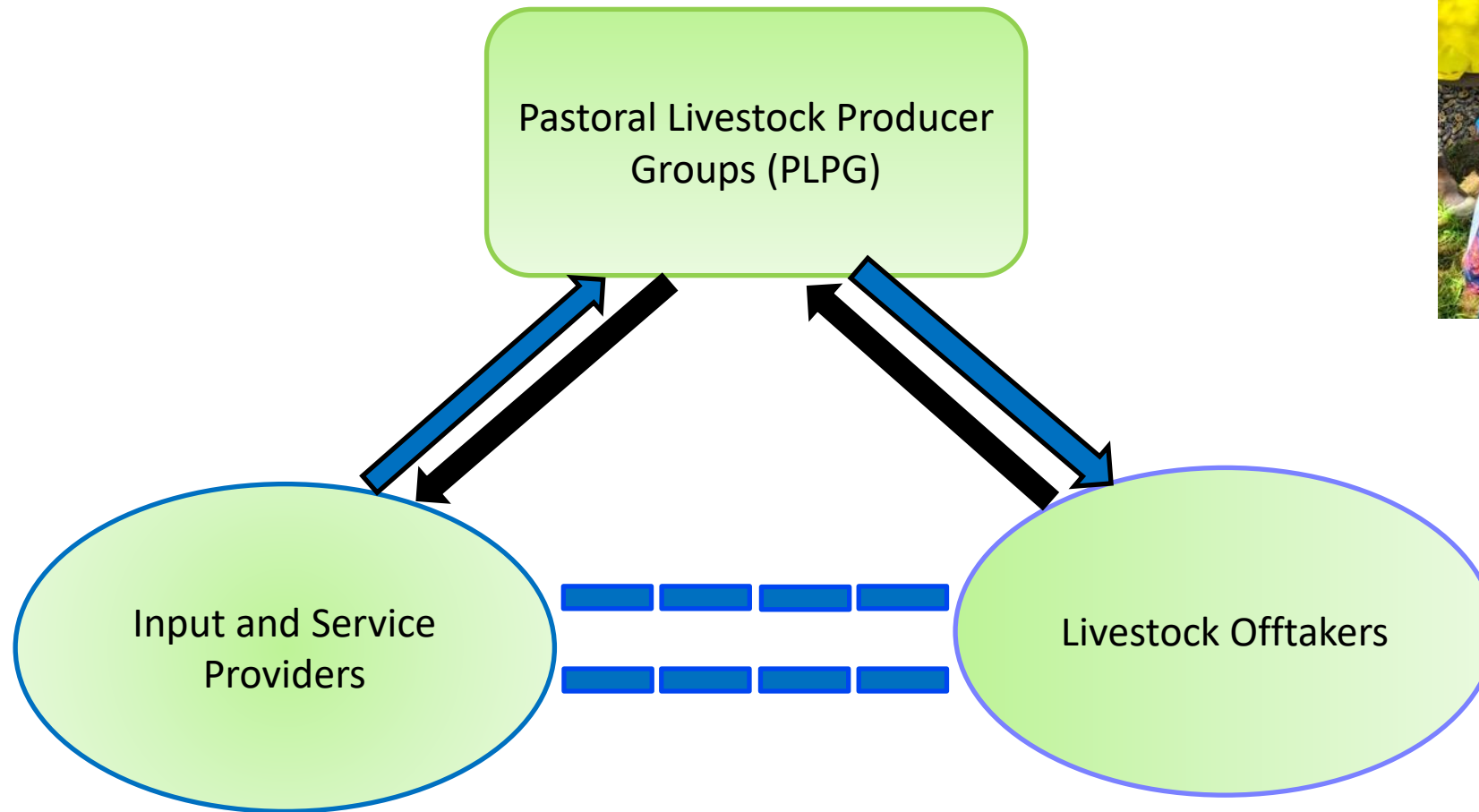
DETAILS

ILRI
INTERNATIONAL
LIVESTOCK RESEARCH
INSTITUTE

50
2024

CGIAR

Rapid Assessment to Characterize Select Value-Chain Nodes

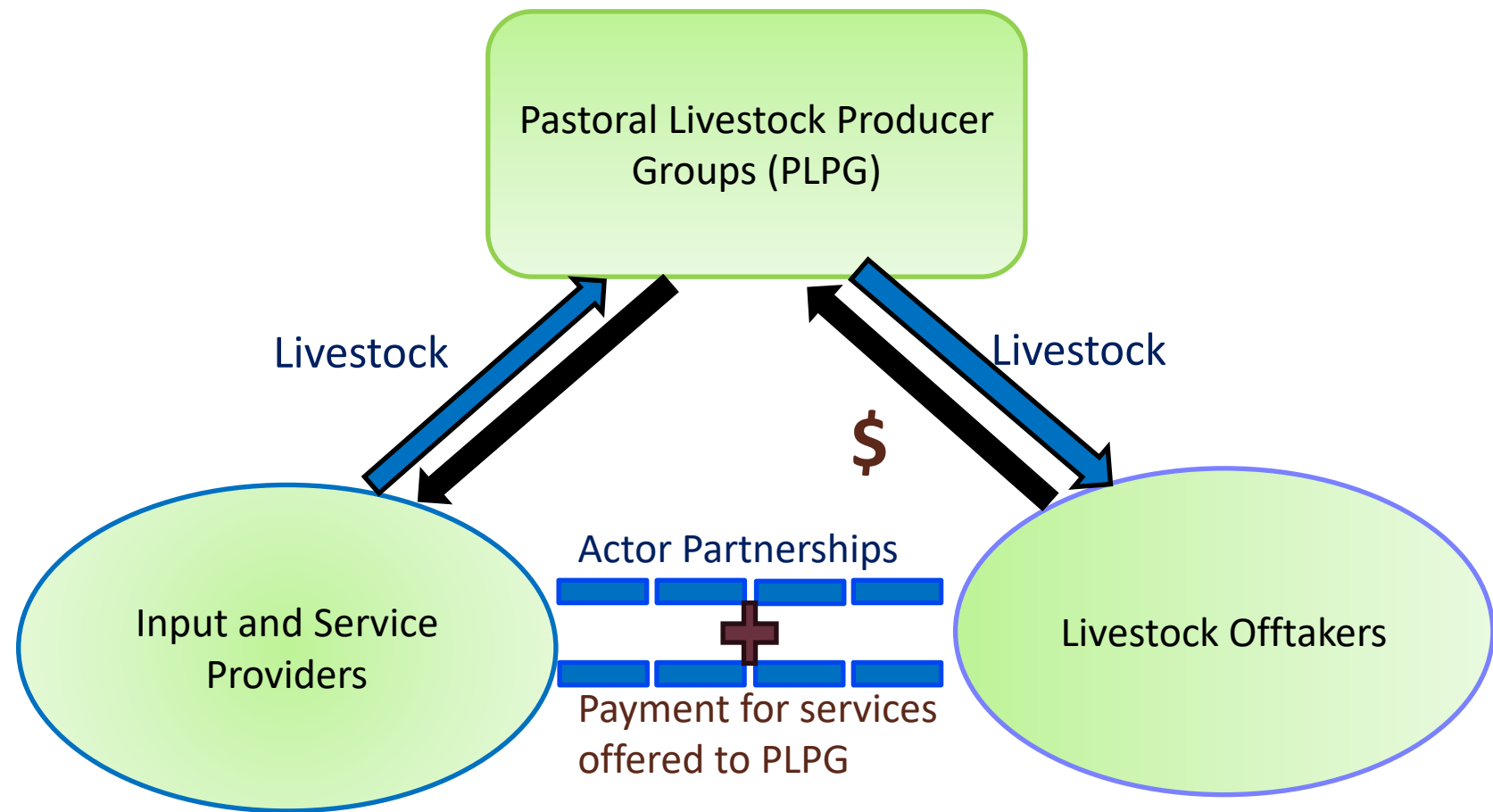
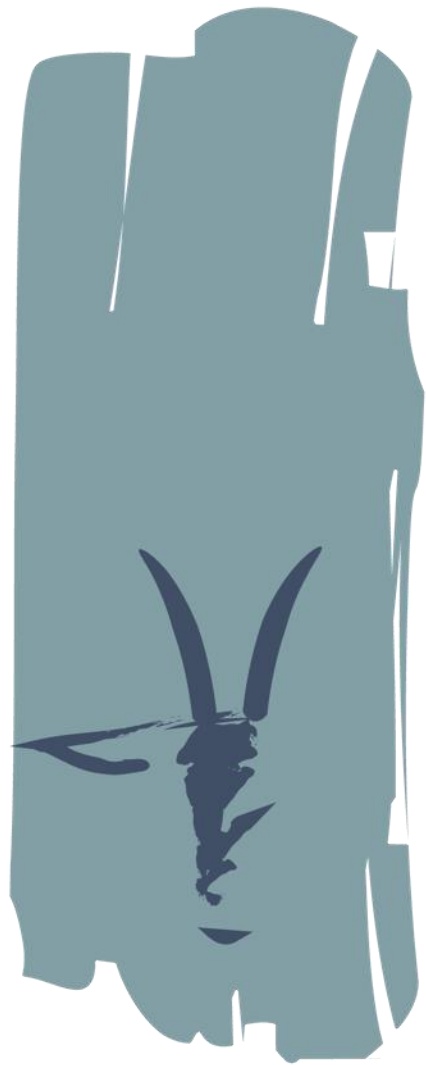


Operationalize the Entrepreneurship Ecosystem

- ✓ Socialize actors on the principles of entrepreneurship ecosystem
- ✓ Facilitate "business to business" forums for actors to interact
- ✓ Develop the capacity of actors in each node of the ecosystem to embed services and practices for "business" development

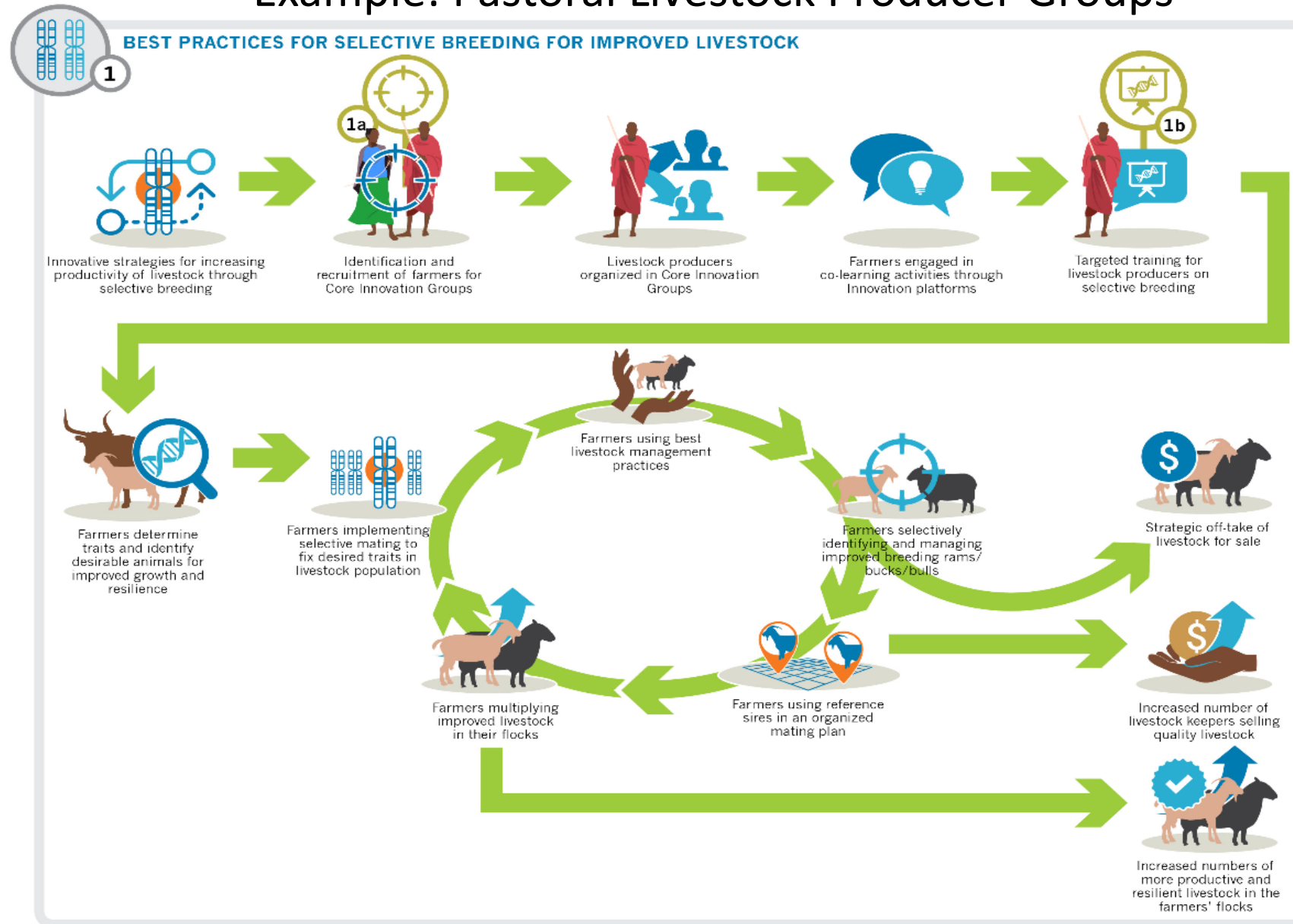


Entrepreneurial Ecosystem at 3 nodes of the Value-Chain



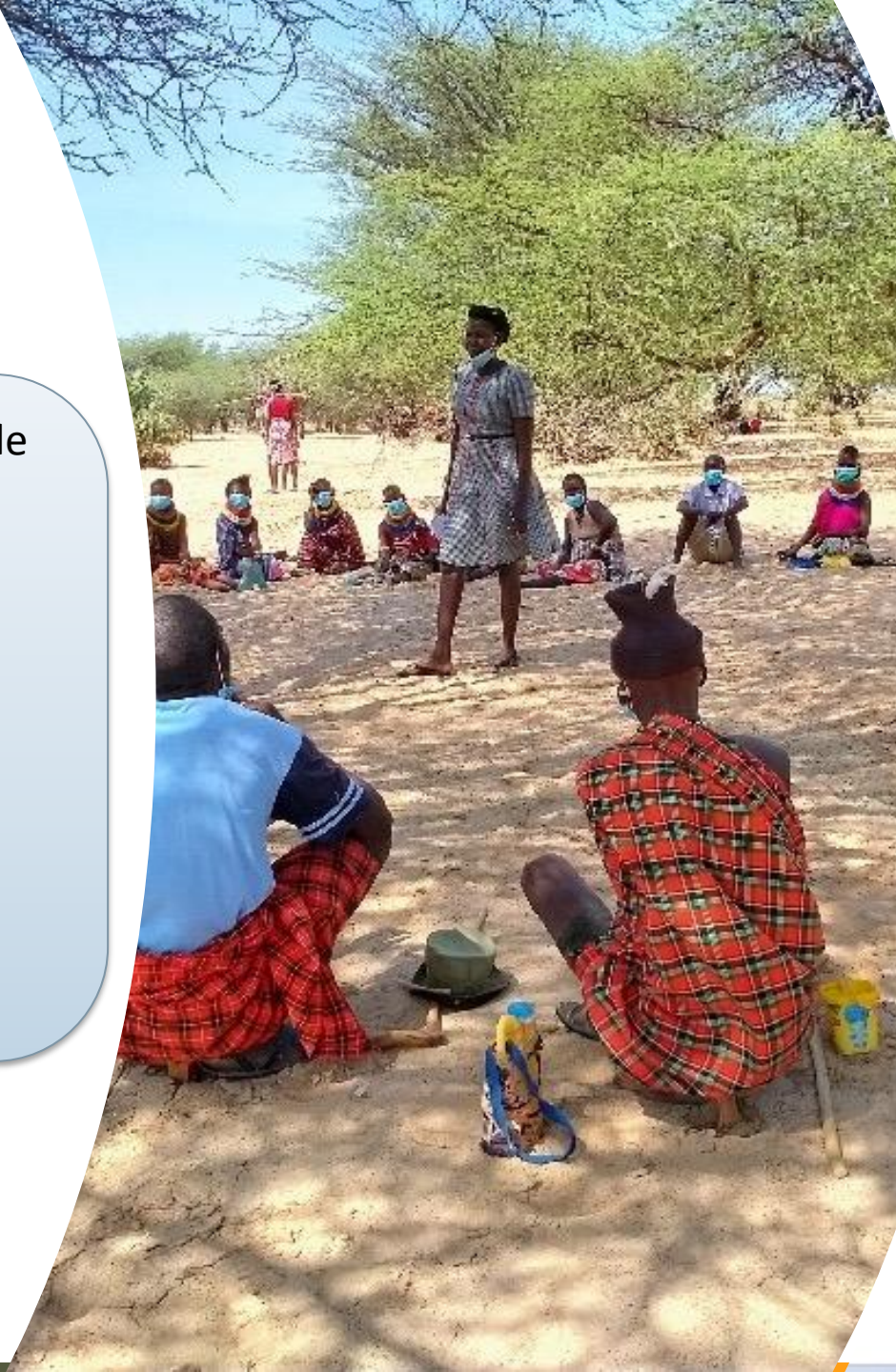
Develop Impact pathway for each Node

Example: Pastoral Livestock Producer Groups



Pastoral Livestock Producer Groups

- Focus on the most valuable assets in communities
- Integrate indigenous knowledge and values in planned interventions
- Expand networks for services and market opportunities for animal offtake
- Ensure farmer to farmer learning



Developing community-based breeding programs to improve productivity of sheep and goats in Turkana, Isiolo and Marsabit counties Kenya

Background

In 2019, the Government of Kenya through the Ministry of Agriculture, Livestock and Fisheries and Irrigation (MALFI) selected the International Livestock Research Institute (ILRI) to contribute to the World Bank-aided Regional Pastoral Livelihoods Resilience Project (RPLRP) in Kenya. The project intervention aims to enhance the livelihoods and resilience of pastoral and agro-pastoral communities in cross-border drought-prone arid to semi-arid areas of the northern counties of Turkana, Isiolo and Marsabit through:

Building capacity within the pastoral communities to maintain genetic diversity of their indigenous livestock while improving productivity.

Promoting behaviour change towards more commercial livestock production

General characteristics of the counties

Turkana County
Turkana County has an area of 70,586 km². The county is hot and dry with annual rainfall ranging from 52 mm to 480 mm (mean 200 mm). The mean annual temperature is 30.5°C. The county experiences cyclical prolonged dry periods followed by short

periods of very intense rainfall, which result in loss of livestock assets and livelihoods. Turkana County has 6 sub-counties, 30 wards, 56 locations and 156 sub-locations, with an estimated human population of 926,967¹.

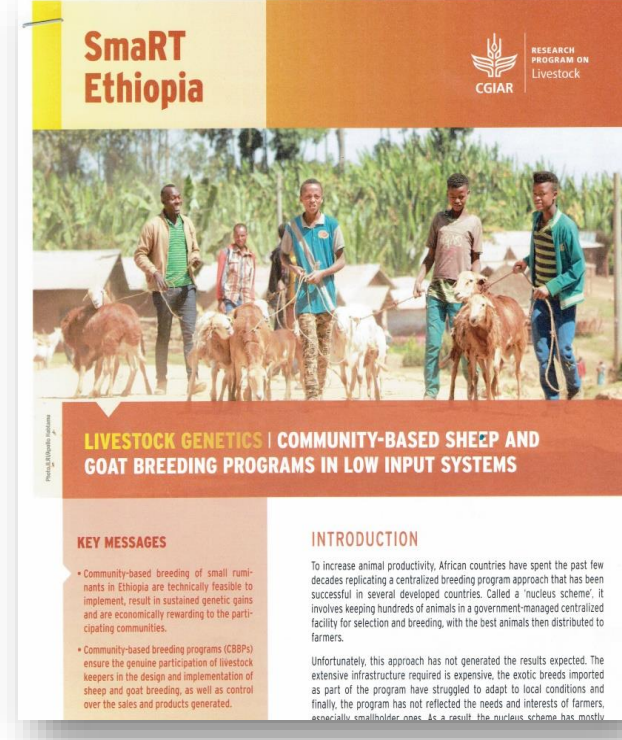
Figure 1: Map of Kenya indicating the location of the counties involved in the project.

¹ KNBS (Kenya National Bureau of Statistics). 2019. 2019 Kenya housing and population survey volume 1: Population by county and sub-county. [Available from <https://www.knbs.or.ke/wp-content/uploads/2019/kenya-population-and-housing-census-volume-1-population-by-county-and-sub-county>].



Gender and youth inclusion

- Critical from the onset
- We need to understand socio-cultural interactions between communities and their different livestock
- Men, women and youth have differential roles as keepers of locally adapted livestock breeds
 - ✓ *Gender asset disparities related to livestock result from social norms, market conditions and government policies*
- Generate evidence on the **opportunities livestock related interventions could offer women, men and the youth**
- Identify value chain segments where women and youth are found and enhance their value



Adapt technologies and practices to accelerate genetic gains

Best animal management practices

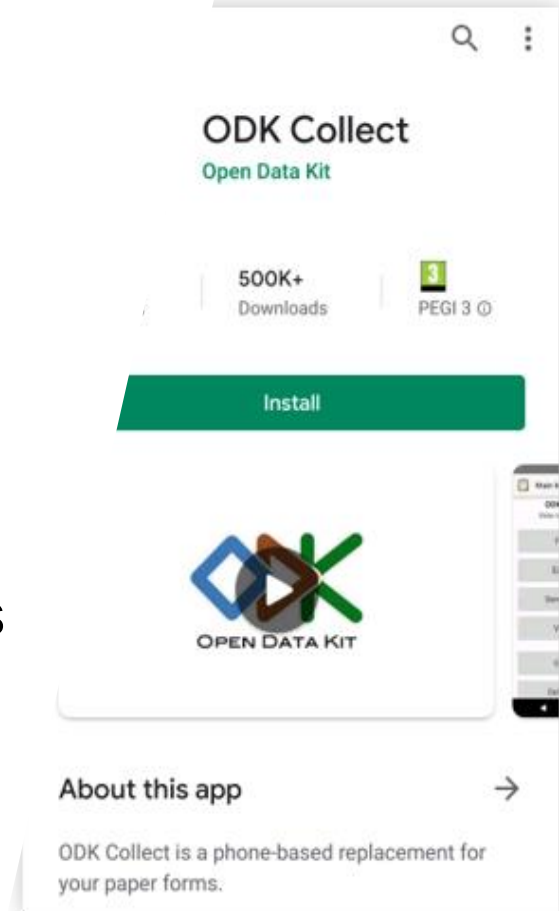
- Mating management in flocks
- Feeding practices
- Disease control measures

Data capture using ICT tools

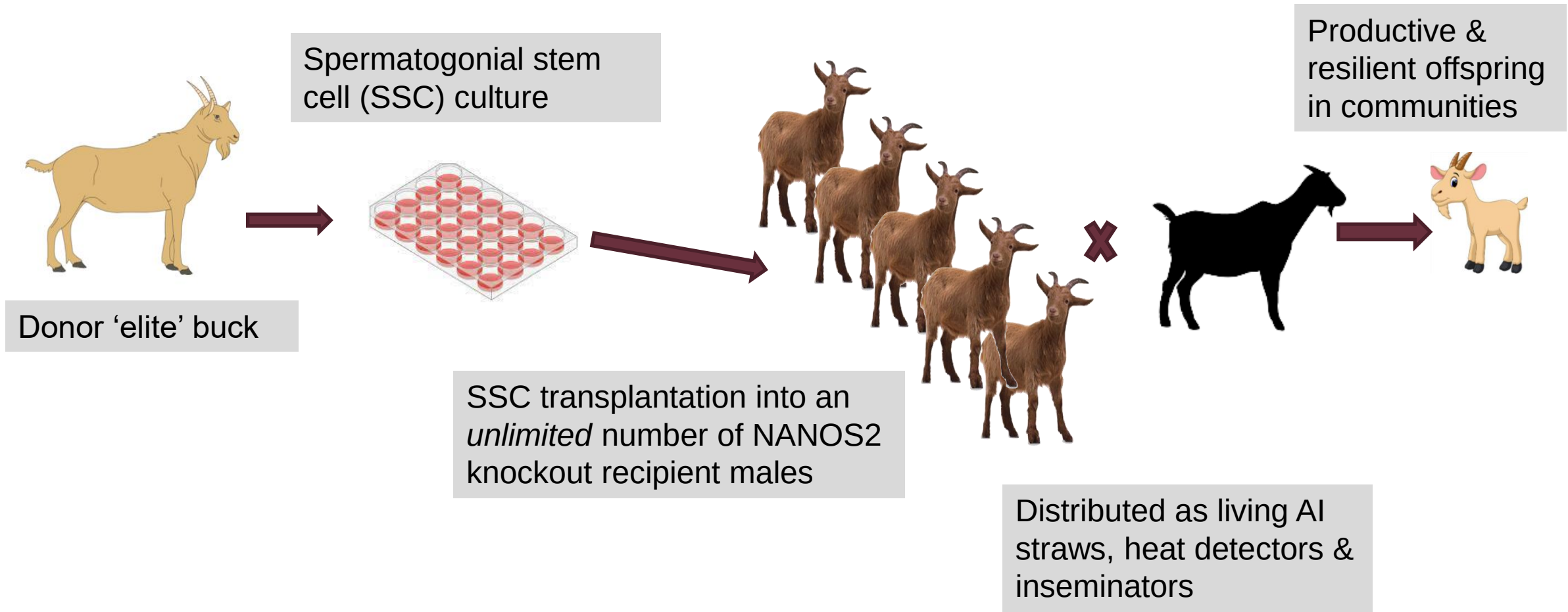
- Develop digital data capture platforms to monitor animal performance to systematically improve and deliver desired genetics

Genomic technologies

- SNP technologies to determine breed composition
- Promote best genotypes for the different production systems
- Build reference genome for indigenous breeds



Option to amplify delivery of preferred Genetics with the Surrogate Sire breeding approach



Partnerships and Investments

- Pastoral livestock community leaders
- National and county-level stakeholders
- Private sector partners providing services in communities
- NGOs, CBOs and other stakeholders
- Organizations providing relief for vulnerable communities

✓ Develop possible credit products and streams to finance investments



Concluding Remarks

- ✓ Engaging pastoral communities through **gender-inclusive groups** enables faster acceptance and adoption of new practices
- ✓ Regular **capacity development and community engagement** is critical for sustained change in behaviour and practices
- ✓ **New technologies and practices** need to be adapted and **contextualized** to help accelerate change in pastoral systems



Acknowledgement

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